

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DN A01654

*In re* application of: Beckley *et. al.*

Serial No.: 10/660,186      Art Unit.: 1796      Confirmation No. 5800

Filed: 09/11/2003      Examiner: Michael Bernshteyn

For:      MICHAEL ADDITION COMPOSITIONS

Declaration of Mai Chen Under 37 CFR 1.132

[0001]      I, Mai Chen, of Hoffman Estates, IL, 60195, received my Ph.D. in Chemistry from University of Southern California in 1992. I have been employed by Rohm and Haas Company or its predecessors and affiliates, including Morton International, since 1992, currently as a Distinguished Scientist in Adhesives & Sealants research and development. I am a coinventor on several US Patents relating to adhesives, including, for example, US 7,119,144, which involves Michael addition compositions.

[0002]      Re: US Patent Publication 2003/0165701 ("Straw")

[0003]      I have read and understood US Patent Publication 2003/0165701 ("Straw"). In particular, I have examined paragraph #39, in which Straw states, "In a next step, the volatiles should be removed, for instance under a vacuum."

[0004]      The subject of Straw's publication is a water borne curable coating composition (see Straw's abstract, and Straw's paragraph #13, where he defines his invention).

[0005] The statement in Straw's paragraph #39 does not mean that water is removed from the curable coating composition of Straw's invention. Straw's paragraph #39 describes a method of preparing a single ingredient in Straw's composition. Straw's paragraph #39 describes how to make a specific Michael acceptor, namely an olefin-modified malonate derivative that has sulfonates incorporated into it. This acceptor, according to Straw's paragraph #39, is made by a reaction that is conducted in a volatile organic solvent, and the last step in the preparation of the specific Michael acceptor is to remove volatiles from the reaction mixture. That is, Straw's paragraph #39 teaches removal of the volatile reaction medium from the specific Michael acceptor. Straw's paragraph #39 does not teach removal of volatiles from the curable composition.

[0006] Straw teaches that his compositions are "water borne." In each of his examples, the composition that is curable is the composition that is formed by adding Straw's "pack 1" to his "pack 2." In all of Straw's examples, the amount of water by weight percent varies from 27.5% (Example 2) to 37.3% (Example 1). In Straw's Example 2 through Example 5, the "pack 2" is a pure Michael acceptor made by the method of Straw's paragraph #39. In those examples, the curable composition is formed by mixing pack 2 with pack 1, and in those examples the weight percent water in the curable composition is between 34% and 35%.

[0007] The curable compositions of Straw's invention definitely contain more than 5% by weight of water because they are "water borne." A "water borne" composition typically has 40% or more water by weight. In any case, a composition that is "water borne" must have more than 5% water by weight.

[0008] High Solids Compositions

[0009] I am familiar with a wide variety of compositions for coatings and adhesives, including compositions that are generally described as "high-solids" compositions. The definition of "high-solids" varies somewhat, but a composition with

5% or less by weight of non-reactive volatile compounds will qualify as a "high-solids" composition by any widely-accepted definition.

[0010] To make an effective high-solids coating or adhesive, it is generally necessary to do more than simply remove solvent from a low-solids coating. Usually, in a low-solids composition that is suitable as a coating or an adhesive, the ingredients are dissolved or dispersed in a solvent such as water or an organic solvent. Normally, if a particular low-solids composition is known, and it is desired to make an analogous high-solids coating, much more needs to be done besides removing the solvent. To make the analogous high-solids coating, it is usually necessary to make changes one or more of the ingredients. Normally, any polymers that were suitable in a low-solids coating must be either altered or replaced to make them suitable for a high-solids coating (often, for example, by lowering the molecular weight). Also, the additives that are suitable for a known low-solids composition must be either altered or replaced if the analogous high-solids composition is to be effective.

[0011] In sum, the materials that are normally required for high-solids compositions are different from those used in low-solids compositions. Thus, if it is known that certain materials are suitable for use in a low-solids composition, it is not obvious to a person of ordinary skill in the art that those same materials would be suitable for use in a high-solids composition.

[0012] US Patent 5,959,028 ("Irie")

[0013] I have read and understood US Patent 5,959,028 ("Irie"). Irie teaches a "curable resin composition" (col. 2, line 2). Irie teaches that, in his composition, all of the components "are dissolved or dispersed in an organic solvent conventionally used in the coatings industry" (col. 6, lines 19-20). Irie's curable resin composition is, therefore, a low-solids composition. Just because Irie's ingredients are suitable for use in his low-

Declaration by Mai Chen

solids composition does not make it obvious to a person of ordinary skill in the art that his ingredients would therefore be suitable for use in a high-solids composition.

[0014] Irie's composition includes his component (b), which is an acrylate polymer having a plurality of malonate-terminated pendant groups and having number-average molecular weight of 1,000 to 50,000 (col. 4, lines 14-17). Irie's composition also contains component (a), which may optionally be another polymer (col. 3, line 36).

[0015] The fact that Irie's composition contains at least one polymer provides a specific reason why it is not obvious to a person of ordinary skill in the art that Irie's ingredients would be suitable for use in a high-solids composition. As stated above, it is common that a polymer suitable for a low-solids composition must be altered or replaced in order make an effective high-solids composition. It would require extensive experimentation to characterize Irie's ingredients to find out whether Irie's ingredients would be suitable for use in a high-solids composition. Therefore, it would not be obvious to a person of ordinary skill in the art to design a high-solids coating by simply removing the solvent from Irie's composition.

[0016] I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under the United States Code and such willful statements may jeopardize the validity of any patent application or patent issued thereon.



---

Mai ChenDate: 4/1/2009